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SOLVENTS FOR ALKALOIDS AND ALKALOIDAL SALTS.

By George L. Schaefer.

For the last few years I have made use of methylalcohol and mixtures of it with other liquids to extract alkaloids from raw materials and to determine the alkaloids in all kinds of raw materials and pharmaceutical products. Methylalcohol is in the market of highest purity at a low price under various names, such as Columbian spirits, Colonial spirits and others, and is in many cases a far better solvent for alkaloids than the more expensive ethylalcohol, and its use for laboratories and analytical purposes is therefore often to be preferred. Mixtures of methylalcohol with other solvents can also be used with advantage according to the nature of the testing material. Such solvents are benzol, toluol, chloroform, fusel oil, ether, acetone and others. Especially mixtures with benzol or chloroform are very good solvents. In many cases, where the alkaloid is little or not soluble in chloroform, benzol, etc., a small quantity of methylalcohol added to these liquids will render it easily soluble. These mixtures are to be preferred in place of pure methylalcohol in the presence of extractive or coloring matter as well as of inorganic substances, which might be more or less soluble in methylalcohol, but are not soluble in the proper mixture.

I have found methylalcohol to be especially an excellent solvent for morphine alkaloid, as also are mixtures with some of the liquids mentioned before, especially with chloroform and benzol. These solvents enable the chemist to extract and to determine morphine quickly and quantitatively from its salts or preparations in the cold with a small amount of the liquid. The testing material must be dry or nearly so, as the solubility of morphine alkaloid in methyl-

alcohol is decreased by water. Pure commercial methylalcohol of 98–99 per cent. dissolves crystallized alkaloid morphine easily in the proportion of 1 grm. to 15 c.c., while of methylalcohol of 80 per cent. 200 c.c. are required for solution at 25° C.

Chloroform, benzol and other liquids are separated out by water from the methylalcoholic mixture. The solubility of morphine salts in methylalcohol is increased by water.

For the determination of morphine in dry preparations, salts, pills, tablets, etc., the testing material corresponding to about 0.3 grm. of morphine, is to be finely triturated in a small mortar with a sufficient quantity of purified sharp sand under the addition of an excess of bicarbonate of soda, carbonate of lime or magnesia, etc., and the mixture moistened with as little water as possible. The mass is allowed to dry out slowly in the mortar, exposing it to a temperature of 30–40° C., occasionally triturating until dry. The mixture is transferred to an Erlenmeyer flask, the mortar cleaned with sand and, if necessary, washed with a few cubic centimetres of the solvent to remove all traces of the alkaloid to the flask. About 30–40 c.c. of a freshly made mixture of 1 vol. methylalcohol and 4 vol. of chloroform is added and the flask allowed to stand for 1 hour, moderately but frequently shaking the same. A mixture of 1 vol. methylalcohol and 4 vol. of benzol can also be used. The liquid is filtered off through a small filter and the residue thoroughly washed 3–4 times with about 10 c.c. each time of the solvent. The solution is distilled off, the residue taken up with N/20 sulphuric acid and the excess of the acid titrated in the usual way, using cochineal or methyl red as indicator.

I found mixtures of methylalcohol with chloroform or benzol in the proportion 1 : 4 to give the most satisfactory results, while, however, the solvent power of the liquid can be increased if circumstances require it, using as solvents pure commercial methylacohol or a mixture containing a higher percentage of it. At 25° C. methylalcohol dissolves U.S.P. alkaloid morphine 1 grm. in 15 c.c., a mixture of 1 vol. methylalcohol and 4 vol. of chloroform dissolves the alkaloid 1 : 22 c.c., 1 : 4 vol. benzol mixture dissolves it in the proportion 1 : 40 c.c. whilst it is soluble in 15 c.c. of a mixture of 1 : 2 vol. chloroform and in 25 c.c. of 1 : 2 vol. benzol. Mixtures with methylalcohol cannot be used to determine morphine from aqueous solutions of morphine salts by the shaking out process. For this purpose I have used for years as a very convenient solvent a mixture of

	Ethyl alcohol	Methyl alcohol.	Chloroform	Benzol	Ethyl alcohol 1 vol. Chloroform 4 vol.	Ethyl alcohol 1 vol. Benzol 4 vol.	Methyl alcohol 1 vol. Chloroform 4 vol.	Methyl alcohol 1 vol. Benzol 4 vol.	
Morphine alkaloid cryst.	1 : 258	1 : 15	1 : 2500	insoluble	1 : 150	1 : 500	1 : 22	1 : 40	95% alcohol 1 : 500 c.c.
Morphine sulphate	1 : 560	1 : 50 1 : 437	insoluble	insoluble	1 : 6100	1 : 7500	1 : 455	1 : 1500	85% alcohol 1 : 250 c.c. 80% alcohol 1 : 130 c.c.
Morphine muriate	1 : 165	1 : 25 1 : 95	insoluble	insoluble	1 : 555	1 : 1120	1 : 50 1 : 150	1 : 395	95% alcohol 1 : 165 c.c. 85% alcohol 1 : 85 c.c. 80% alcohol 1 : 50 c.c.
Codeine alkaloid	1 : 2	1 : 2	1 : ½	1 : 10	1 : 1	1 : 1½	1 : 1	1 : 1	
Codeine sulphate	1 : 1260	1 : 225	1 : 9000	insoluble	1 : 1090	1 : 2100	1 : 60	1 : 333	
Diacetyl-morphine alkaloid	1 : 33	1 : 25	1 : 1½	1 : 8	1 : 1½	1 : 4	1 : 1½	1 : 4	
Hydrochloride of diacetyl-morphine	1 : 11	1 : 9	1 : 3	insoluble	1 : 22	1 : 140	1 : 5	1 : 15	
Ethyl-morphine hydrochloride	1 : 25	1½	1 : 190	insoluble	1 : 20	1 : 88	1 : 5	1 : 12	
Caffeine	1 : 95	1 : 110	1 : 5½	1 : 98	1 : 6	1 : 35	1 : 4	1 : 20	
Quinine alkaloid	1 : 075	1 : 1½	1 : 2	1 : 180	1 : 2	1 : 2	1 : 3	1 : 4	
Cinchonidine alkaloid	1 : 25	1 : 17	1 : 3½	1 : 900	1 : 3½	1 : 22	1 : 3½	1 : 9	
Cinchonine alkaloid	1 : 205	1 : 160	1 : 110	1 : 2000	1 : 18	1 : 75	1 : 16	1 : 40	
Quinine sulphate	1 : 45	1 : 150	1 : 4	1 : 84	1 : 3	1 : 8	1 : 4	1 : 15	
Quinine sulphate	1 : 250	1 : 32	1 : 370	insoluble	1 : 8	1 : 190	1 : 5	1 : 21	
Cinchonidine sulphate	1 : 150	1 : 3½	1 : 650	insoluble	1 : 5	1 : 65	1 : 5	1 : 11	
Cinchonine sulphate	1 : 13	1 : 1½	1 : 100	insoluble	1 : 2½	1 : 14	1 : 3½	1 : 3½	
Quinidin sulphate	1 : 20	1 : 2½	1 : 12	insoluble	1 : 3	1 : 12	1 : 3	1 : 5	
Strychnine alkaloid	1 : 182	1 : 250	1 : 6½	1 : 150	1 : 4	1 : 20	1 : 4	1 : 15	
Strychnine sulphate	1 : 125cc	1 : 12	1 : 233	insoluble	1 : 8	1 : 140	1 : 4	1 : 8	
Strychnine nitrate	1 : 270	1 : 290	1 : 80	insoluble	1 : 20	1 : 150	1 : 25	1 : 100	
Brucine alkaloid	1 : 1½	1 : 1	1 : 5	1 : 60	1 : 3	1 : 3	1 : 1½	1 : 2	
Brucine sulphate	1 : 360	1 : 60	1 : 166	insoluble	1 : 20	1 : 555	1 : 5	1 : 18	

the lower fractions of fusel oil with chloroform. I take the fraction obtained from raw fusel oil, which distils between 90° C. and 110° C. The distillate is separated from water and the oil shaken twice with one-half of its volume of saturated salt solution. This oil is shaken with dry calcined sodium or potassium carbonate to remove most of the water in solution and then mixed 1 : 1 vol. with chloroform. If the resulting mixture is milky it has to be shaken again with calcined carbonate of potash or soda until perfectly clear. This mixture dissolves alkaloid morphine crystals readily when hot in the proportion 1 grm. to 60 c.c., when cold 1 : 140 c.c. Alkaloid morphine freshly liberated by an alkali from an aqueous solution of a morphine salt in the presence of the solvent and shaken out at once in the amorphous state, is taken up by this mixture in the proportion 1 grm. : 80 c.c. at 25° C. The mixture is not very liable to form emulsions and can easily and completely be evaporated at a low temperature on a water bath, leaving the morphine as a white residue, which can be titrated in the usual way.

I add a table showing the number of cubic centimetres of different solvents required to form a clear solution with 1 grm. of the most important alkaloids and salts at a temperature of 25° C. This table might be of interest to pharmaceutical chemists for analytical purposes.

Morphine hydrochloride and morphine sulphate with the full amount of water of crystallization dissolve easily in cold methyl-alcohol, but after some time the solution begins to separate out salts containing only 2 molecules of water of crystallization. These salts require much more of the solvents for resolution. The table therefore shows 2 numbers for these salts, the lower number showing the solubility of the U.S.P. salts and the higher the amount of cubic centimetres required for resolution of the separated crystals.

LABORATORY NEW YORK QUININE AND CHEMICAL WORKS (LTD.).

SOME RECENT LEGISLATION RELATING TO POISONS AND HABIT-FORMING DRUGS.

BY. M. I. WILBERT, Washington, D. C.

In compliance with a request made by the Conference of State and Provincial Boards of Health, in June, 1909, the Public Health Service of the United States has undertaken to compile and classify the laws relating to public health matters. Up to the

present time the laws relating to six different subjects have been compiled and published in the form of Public Health Bulletins. One of these, Bulletin 56, "Digest of Laws and Regulations in Force in the United States Relating to the Possession, Use, Sale, and Manufacture of Poisons and Habit-Forming Drugs," is of direct interest to pharmacists in that an effort has been made to reflect not alone the laws relating to the manufacture and use of poisons, but also to refer in outline, at least, to the laws regulating the practice of pharmacy and the sale of poisons. For ready comparison, the requirements under the several laws have been compiled in the form of tables which clearly indicate the need for careful study in the enactment of future legislation on this subject.

To keep the material up to date, the recent legislation is being compiled and published in Public Health Reports and in this way the several publications are constantly available as works of reference to all who may be interested.

During the legislative year of 1912-1913, the legislatures of some 42 states were in session and the resulting laws more or less directly affecting pharmacy were not alone numerous but, in some instances at least, also far reaching. Among the more radical pieces of legislation are the Walker cocaine bill in New York and the transfer of the enforcement of the drug law in Ohio from the Board of Pharmacy to a commission.

Among the notable failures to secure desirable and evidently needed legislation a good illustration is to be found in Pennsylvania where the pharmacists failed to secure favorable action by the Senate on a bill designed to codify and somewhat elaborate the present laws relating to the practice of pharmacy. Pharmacists also failed to secure the approval of the Governor of the State for an antinarcotic bill that had passed both houses of the legislature and succeeded in defeating a bill designed to prevent the promiscuous sale of corrosive sublimate in tablet form.

The successes and failures of the past legislative year evidence the fact that many of the measures offered were hastily and carelessly drafted, or were subsequently so amended as to make them difficult of enforcement. Little or no attention appears to have been given to the need for greater uniformity in legislation relating to public health matters and in connection with habit-forming drugs additional inducements have been placed on illicit traffic.

To make the existing legislation effective an effort should be

made to have the laws enforced to the letter and wherever found irksome or impracticable the laws should be so amended as to effectually safeguard the interests of the public without inflicting unnecessary hardships on honest dealers and manufacturers.

In the succeeding enumeration an effort has been made to call attention to the laws relating to matters of public health which directly or indirectly affect the pharmacist or are designed to restrict the manufacture, sale or use of poisons and habit-forming drugs.

Much of this information is based on news items in pharmaceutical or other journals and the compilation as presented here is therefore suggestive rather than authoritative.

Alaska.—The first legislature of the Territory of Alaska has adopted several laws relating to public health matters, among others, laws regulating the practice of medicine and of pharmacy.

Arizona adopted new laws regulating the practice of medicine and the practice of pharmacy and the sale of poisons; also enacted a pure food law.

Colorado enacted an antinarcotic law, a law to restrict the sale of carbolic acid and a modification of its pure food law.

District of Columbia.—The annual appropriation bill for the District of Columbia includes a revision of the existing laws relating to the sale of intoxicating liquors. This revision restricts the sale of alcoholic beverages and non-medicated alcohol in drug stores to physicians' prescriptions and requires that a special record be provided for such prescriptions.

Idaho has enacted amendments to the food laws and to the poison laws.

Illinois enacted amendments to the pharmacy laws.

Indiana adopted a revised antinarcotic law and a modification of the law regulating the practice of pharmacy.

Kansas adopted amendments to the pharmacy law.

Maine enacted a law regulating the sale of habit-forming drugs.

Massachusetts enacted several measures designed to strengthen the pharmacy laws; also adopted a law requiring notification of cases of occupational diseases.

Missouri adopted a law designed to restrict occupational diseases.

Montana adopted amendments to the pharmacy law.

Nevada enacted a new pharmacy law and a law to regulate the sale of poisons and of narcotics.

New Jersey adopted a law regulating the sale and manufacture of insecticides and also a law designed to restrict the sale of methyl alcohol.

New York enacted the Walker bill to restrict the sale of cocaine; also adopted an amendment to the pure food and drug law.

North Dakota adopted laws to prohibit the sale and the use of snuff and of cigarettes.

Ohio enacted a law placing the enforcement of food and drugs laws in the hands of a commission; also provides for the revocation of certificates to practice pharmacy and enacted an amendment to the laws regulating the sale and use of narcotics a law relating to the misbranding of drugs and a law designed to prevent occupational intoxications.

Oregon enacted a revised law to regulate the practice of pharmacy, sale of poisons and sale and use of narcotic drugs, also adopted a law forbidding the advertisement of cures for venereal diseases in newspapers and making the editor of the newspaper equally liable with the advertiser.

Pennsylvania enacted a law designed to prevent lead poisoning.

Rhode Island penalizes the promiscuous distribution or giving away of medicine or other article which contains any drug or poison.

Vermont enacted an amendment to the food and drugs law; also adopted a regulation making venereal diseases reportable.

Wisconsin adopted a law designed to restrict the sale of habit-forming drugs; also a law which requires the reporting of venereal diseases.

Wyoming adopted an amendment of the law regulating the sale of habit-forming drugs; also an amendment to the pure food law.

THE REGULATION OF DEGREES.[1]

By A. B. Stevens.

Doubtless the question of regulating degrees given by colleges and schools of pharmacy will be considered by the Pharmaceutical Conference of Teaching Colleges. It ought to be perfectly feasible for the Conference to state what degrees they will recognize and

[1] Read at the Nashville meeting of the American Conference of Pharmaceutical Faculties, August, 1913.

the conditions under which such degrees should be given in order to receive recognition. As this is a question of national importance it certainly should be settled by the Conference. It is unfortunate that any single state should have undertaken to settle this question. We certainly realize that New York State has a perfect right to make its own laws and state what qualifications they will require for registration, but there is a question as to their right to name the degree that shall be given by all colleges for a certain amount of [redacted] The object of any state pharmaceutical law should be th[redacted]tion of the people. It is not the degree but the work that [redacted]nts for the public protection. It seems unreasonable to refuse a candidate for registration an examination because he has a certain degree when he would be admitted with the same qualifications if he had another degree. Do not for a moment think that I am opposed to the regulation of degrees, but I do maintain that they should be regulated by the Conference and that it would have been far better if New York State, instead of adopting a fixed standard, had made their recommendations to the Conference. It must be remembered that New York has only one class of colleges, while there is an entirely different class in other states which is entitled to consideration.

In considering degrees and their requirements one thing should be kept in mind, and that is how such action will affect our standing in the educational world. The degree of Graduate in Pharmacy and that of Pharmaceutical Chemist are purely pharmaceutical degrees and in no way related to other educational degrees. Not so with that of Bachelor of Science, which has a recognized standard, being given for four full academic years. Just as soon as we give this degree for anything less than that, we shall cut our own throats. We cannot afford to do anything that will lower our standing among educational institutions. The degree of Bachelor of Science has been given by a few university schools of pharmacy, who have maintained its previous high standing, and I believe that they have the right to insist that the Conference should not recognize any institution that gives this degree for any less than the customary amount of work. If independent colleges or those affiliated with universities are not so situated that they can meet these requirements let them refrain from giving the degree until such time as they can conscientiously meet them. I fully believe that any institution which grants the Bachelor of Science degree for four years of three days a week will not only

lower its own standard among educational institutions but will also lower the standing of the degree as given by other colleges. I therefore hope that the institution which has already announced its intention of so doing will recognize this fact and withdraw its offer to grant this degree, or, increase its requirements to meet the recognized standard.

Turning now to the degree of Doctor of Pharmacy, on the one hand we have a degree which has been granted for two or three years of work in pharmacy, and on the other, we find the Educational Department of the State of New York endeavoring to elevate this degree to the highest position. This I believe to be an impossible task, for it would be hard to conceive of anyone being willing to work six or seven years for a degree, that has already been given for two or three years of work. Should an unsophisticated person start out on such a course he would doubtless find out sooner or later that he had made a mistake and then he would work for the degree of Doctor of Philosophy. We believe that the degree, Doctor of Pharmacy, has already fallen into disrepute. One college that formerly gave the degree has announced that the degree will no longer be given. Professor Jordan has very ably pointed out the fact that the abbreviation, Pharm. D., is so similar to Ph. D. that by dropping the "arm." it becomes identical with the latter. This might lead to dishonesty on the part of unscrupulous persons or to humiliation for the conscientious. In view of the above facts I offer the following:

Resolved. That the degree of Doctor of Pharmacy be not granted by members of the Pharmaceutical Conference.

Resolved, That the degree of Bachelor of Science be not given for less than four full years of collegiate work, requiring not less than 120 hours of credit, an hour of credit being understood to be one hour of class work or two hours of laboratory work each week for 16 or 18 weeks.

LANDMARKS OF PHARMACY.[1]

By Charles H. LaWall.

A landmark, aside from its concrete meaning of a "boundary mark to a tract of land," is a word used figuratively to indicate a distinguishing characteristic, variation or event; "that which marks

[1] Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1913.

a turning point"; "something that serves to distinguish a particular period of time or point in progress of transition."

The important landmarks of pharmacy are the words used to designate the practitioner of this profession, and much interesting history may be learned from an etymological study of the subject and a reference to the history of pharmacy.

The early history of pharmacy, like that of most other professions, is wrapped in obscurity, inasmuch as the practice of medicine, together with the preparation and administration of drugs, was so closely associated with superstitious beliefs and occult practices and the employment of magic or astrology, that no sharp line of demarcation can be drawn between the members of the various professions which are now associated with the art of healing.

The earliest authentic references to the preparation and use of drugs are those of Egyptian origin, particularly in the Papyrus Ebers, which indicate that at that early date the priest was likewise the physician and the compounder and dispenser of medicinal substances. Even in that early time (about 1600 B.C.) it was a criminal offence to add to or vary the ingredients in a prescription, indicating to a certain extent a separation of prescriber from dispenser, but we are not given any information as to the designations of these sub-members of the class of priest-physicians.

The next oldest references are those of the Bible, which date, so far as the actual existing manuscripts are concerned, from a time long after the Christian Era (a fact not generally known), although the Papyrus Ebers itself, the original manuscript of which is still in existence in the British Museum, gives evidence of having been compiled at about the period when Moses was in Egypt. The accurate interpretation of such early manuscripts as the Papyrus Ebers of the 15th century B.C. and of the oldest existing manuscript of the Bible, which date from about the 8th century A.D. or more than 2000 years later, is attended with much uncertainty on account of our unfamiliarity with the exact meanings of words in those early periods.

In the Bible, for instance, the root word which is translated in earlier revisions as "apothecary" in such references as the classic "after the art of the apothecary" is "Rakach" (assuming, of course, that the vowels are correct, for all early Hebrew manuscripts are entirely composed of consonants), which in the Revised

Version is now translated as "the perfumer" and indeed, it is probable that the principal office of the Hebrew apothecary was connected with the compounding of perfumes, incense, anointing oils, pomades, etc., for there are no distinct references in the Bible to any medicine for internal administration. The connection between the priests and physicians did not exist as in Egypt.

The word "apothecary" itself is of more modern origin, being derived from the Latin "apothec," which originally meant a warehouse, particularly of drugs, the apothecary really being a warehouse man, corresponding more closely to the wholesale druggist of to-day than to the retailer. The same root gives rise to the French "Apothecaire," the "Boticario" of the Spanish and Portuguese; the "Bottejago" of the Italian; the "Apotheke" of the Dutch, German and Danish and the "Apothecare" of the Swedish, all of which words are used to designate the practitioner of the art. The word "apothec" itself, meaning the repository or warehouse, gives rise also to the Spanish "Botica" (of which a variant form means a wine cellar), the Italian "Bottega"; the Dutch "Apotheck"; the Danish and Swedish "Apothek" and the German "Apotheke."

In ancient Greece the word pharmacy had its origin in a word "Pharmakon," which meant eventually a drug, medicine or a poison, but the root of which meant simply "to mix," and the transition stages of the word included meanings connected with noxious or poisonous drugs and with sorcery. In the New Testament (the principal original manuscripts of which are in Greek) the word "Pharmakeia," wherever it occurs, is translated "sorcery" or some similar word. The Pharmakotribae of early Greece were the drug grinders and although history is not quite clear upon the subject, they may have been compounders as well and assistants to the Seplasarii, who were ointment makers principally. The herbalists of that period were called "Botanologoi" and the root cutters were "Rhizotomoi."

The Greek word "Pharmakopoeus" meant a purveyor of toxic drugs and was used in a disreputable sense. The "Pharmacopoloi" of Greece were the traveling quack doctors and the classification was sometimes made as a term of reproach, as where Epicurus sneeringly refers to the fact that Aristotle was one of the Pharmacopoloi in the early days before he became a philosopher. The most disreputable association of the same root word by the Greeks was in "Pharmakoi," a term applied to condemned criminals.

The Greek words referred to have given rise to our present words "Pharmacy" and its associated words, as "pharmacist," "pharmaceutical," etc., and the same root has produced the French "pharmacien," the Portuguese "pharmacia" and the Spanish and Italian "farmacia," having an equivalent meaning to pharmacy. The newer use of the word "pharmacology" to include the sum of scientific knowledge concerning drugs is therefore founded upon correct etymological principles but finds few users and fewer adherents because of its more widespread use as a word equivalent to "pharmacodynamics," the study of the action of drugs.

In Rome, at the same period when the "Apothec" was the warehouse for drugs, there was no single word describing the practitioner of pharmacy. As in Greece, the Seplasarii were ointment makers while the Pigmentarii were sellers of dyes and colors. As an interesting sidelight in comparison with present day conditions it is said that Pliny reproached some of his rivals with purchasing their medicines from the Seplasarii without knowing anything of their composition. Seplasia was the name, however, for the place where drugs were sold, as was also Medicina, while "medicamentus" meant either a medicine or a poison and the "medicamentarius" was not only one who prepared and administered the drugs ordered by the physician, but was also a poisoner (as in the Greek "pharmakopeus"). The physicians of that date evidently confined their activities almost entirely to diagnosing and prescribing, as we find as another subclass similar to the medicamentarii the "vulnerarii" or those who treated wounds, equivalent in a minor sense to the surgeon of to-day.

There were also at that time "confectionarii" or compounders of medicines (the word "confection" from "con" and "facere," to put together, is also used sometimes in this sense) and "stationarii" who supplied the compounders with their raw materials and were therefore a subclass of wholesalers, standing between the "apotheca" or warehouseman and the "confectionarius" or compounder. Longfellow, in his Golden Legend, refers to the latter as follows:

> "To report if any confectionarius
> Mingles his drugs with matters various."

While the Arabs are responsible for the separation of pharmacy from its other associations and its elevation to the plane of a dignified profession (from which, by the way, it later descended, as

we shall see) it is strange that little was contributed by them to the landmarks in the shape of the terms used to designate the practitioners of the art. The words "alkali" and "alcohol" are instances of words of Arabian origin in common use, but the word "chemistry" (through alchemist) is the only word of importance in connection with the present article. The prefix "al" of the Arabians means "the" and the word "alchemy" is supposed to come from "al-chyma," the latter portion of the word, according to some authorities, meaning melted or poured out (referring to the practices used in the art) while the original root is "Khem" (the ancient name of Egypt) meaning "black" in recognition of the dark color of the soil, wherefore the practice of alchemy was logically the practice of the black art. It is well known, however, that the alchemists, while reaching for the unattainable accumulated a mass of facts which later, when classified, led to the development of the present science of chemistry.

The word "drug" is of more modern origin and comes from a root word signifying "dry herbs" and is found in a number of languages, as German, "Droge"; Spanish, Portuguese and Italian "Droga" and French "Drogue."

In the 15th and 16th centuries in France, pharmacists or "appotecarii" were officially classed with "épiciers" or grocers, and in a Paris ordinance of 1514 it is declared that "though the apothecary is always a grocer, the grocer is not necessarily an apothecary." In 1777 the separation of these two classes of tradesmen was finally effected in France.

In Great Britain in about the same period, the retail trade in drugs, spices and other commodities was carried on by the mercers (from "merx," the root word from which we derive merchandise).

There were numerous guilds, such as pepperers, spicers and apothecaries, and later grocers or those who sold *"en gros."* The grocers in the 15th century in England were given authority over drugs and spices and had the supervision of the quality of the drugs and medicines sold by the apothecaries. A record of the exercise of this authority is found in the case of the imposition of a fine by the Grocers' Guild upon one John Ashfield, an apothecary, for making an untrue powder of ginger, cinnamon and saunders. This close association between the grocers and apothecaries is further illustrated by a record during Queen Elizabeth's time, of the apothecaries and grocers being required to expose the in-

gredients from which their medicines were prepared, to view in their shops for a stated period, in order that physicians might inspect them and approve of their quality.

The separation of the grocers from the apothecaries in Great Britain by royal edict in 1617 is a matter of history, and it is a matter of history also that the apothecaries' guild was one of the few English guilds which remained true to its name and admitted to its membership only actual apothecaries. The apothecaries of England, however, after being freed from the supervising authority of the grocers, became quite powerful and soon encroached upon the rights and privileges of the physicians in diagnosing and prescribing. The year 1687 saw the beginning of a great contest between the physicians and apothecaries, which was not settled until 1703, when by judicial decision the apothecaries were given the right to treat minor ailments.

Internal dissensions in the Guild later subdivided it into the apothecaries proper, who retained all of the rights of prescribing under certain circumstances and into chemists and druggists, who did not share this privilege. A somewhat similar subdivision into classes seems to have persisted in Germany and some other European countries, where the one class is permitted to compound and dispense drugs and medicines and poisons of all kinds, while the other is restricted to the sale of a limited class of articles.

The foregoing material is by no means new or original but has been prepared with the aid of several of the available works upon the history of pharmacy, particularly the recently published Chronicles of Pharmacy by A. C. Wootton. The excuse for the presentation of this article is that few pharmacists have more than a hazy idea of the history of their ancient and honorable profession. The books with which they are familiar do not treat of the subject, the works which do are not very numerous and it is only through occasional articles found in the pharmaceutical journals that the pharmacist knows his profession has a history at all.

Inasmuch as many of the problems of pharmacy to-day are hundreds and some of them thousands of years old and have been solved at various periods in its history with a greater or lesser degree of success, and for the reason that a closer study of this history may throw additional light upon our present day problems and perhaps aid in their solution, the foregoing facts are presented, not only because they are interesting in themselves,

but because by stimulating interest in the subject they may aid in the development of the profession along the lines of the ideals held out by such worthy members as Galen, Dioscorides, Lully, Valentine, Paracelsus, Van Helmont, Glauber, Goulard, Scheele and many others not so well known, but of equal prominence in their time.

DETECTION AND QUANTITATIVE ESTIMATION OF MINUTE QUANTITIES OF FORMALDEHYDE IN PRESENCE OF HEXAMETHYLENAMINE AND METHYL ALCOHOL IN PRESENCE OF ETHYL ALCOHOL.[1]

By H. A. B. Dunning.

Sometime during the year 1912, Dr. Curtis F. Burnam, member of the staff of Johns Hopkins Hospital, sought my advice as to the most satisfactory method of detecting traces of formaldehyde in urine.

After a careful investigation, I recommended, as most delicate and satisfactory, three tests herein named and described.

Only one of these tests, Rimini's, was of particular value in his work on account of the presence of hexamethylenamine in material tested. Hehner's milk test, while most delicate, was not suitable on account of being conducted in acid solution, resulting in decomposition of hexamethylenamine with the production of formaldehyde.

While Rimini's test has been found to be most satisfactory in differentiation of formaldehyde in presence of hexamethylenamine, experience teaches that certain precautions should be observed to obtain best results.

The specimens to be examined and all test solutions should be warm, not hot, and an excess of nitroprusside solution should be avoided. In weak specimens the nitroprusside solution should be diluted five to ten times. In urine formaldehyde may be detected readily by this test in strength of 1-100,000; in weaker strengths than this, much depends upon the care and experience of the operator.

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[1] Read at the Nashville meeting of the American Pharmaceutical Association, August, 1913.

The test is usually conducted as follows: About 2 c.c. of urine specimen, contained in five-inch test tube, is warmed and two drops of one-half per cent. solution of phenylhydrazine hydrochloride is added, followed by two drops of one-half per cent. solution of sodium nitroprusside, the mixture being made strongly alkaline with saturated solution of sodium hydroxide. In strengths 1-20,000 to 1-50,000, a deep blue coloration results, changing in a few minutes to green, then yellow, or perhaps, red. In more dilute solutions the blue lasts momentarily only, and is quickly superseded by green. The blue may be made to last longer and become more distinct by adjustment of the quantities of sodium nitroprusside and phenylhydrazine hydrochloride added, the weaker strengths requiring less nitroprusside and phenylhydrazine. In alkaline solutions phenylhydrazine gives yellow color, therefore, if there is but a trace of formaldehyde, the depth of blue color is masked and converted into green by mixtures of colors blue and yellow.

Phloroglucin test, the author of which I have lost record, is quite satisfactory for dilutions of formaldehyde in urine, not exceeding 1-100,000, the red color being masked by yellow of the urine. The author of this test directs that a solution of phloroglucin, 1 gram, alcohol 90 per cent. 100 c.c. and sodium hydroxide 10 grams, be made fresh. A much better plan is to prepare a solution of phloroglucin in alcohol, 1 gram to 100 c.c., and add strong solution of sodium hydroxide to specimen at time of testing.

The test is conducted as follows: To 2 c.c. of specimen, previously warmed, contained in a five-inch test tube, add one drop of alcoholic solution of phloroglucin, then make strongly alkaline with saturated solution of sodium hydroxide, previously warmed, the color produced is red.

These tests have been used with satisfaction in connection with an investigation made by Dr. Burnam and his associates. It seems to me desirable, in connection with this paper, to call attention to the character of Dr. Burnam's work and the importance of the conclusion arrived at. In a few words, Dr. Burnam has learned that small doses, as little as five grains per day of hexamethylenamine may produce formaldehyde in the urine of strength exceeding 1-30,000, this being highly destructive to the mucosa of the bladder, while in other patients or, perhaps, at different times, one hundred grains per day will produce only traces of formaldehyde, or perhaps, none at all. The point of interest is that it is

dangerous to give large doses of hexamethylenamine until the patient has first been treated with small doses.

Subsequent to the publication of Dr. Burnam's paper, much interest was evinced by the medical fraternity in the discovery of a test for the quantitative estimation of formaldehyde in the urine that would differentiate hexamethylenamine and yet would be practicable in the hands of the physician.

I offer the following test to fill this requirement; from an assayed specimen of commercial formaldehyde solution, accurate dilutions are prepared of strengths 1-50,000, 1-100,000, 1-200,000, 1-300,000, as standard solutions for colorimetric comparison. More standard solutions may be prepared if necessary. The test will estimate quantitatively up to 1-500,000 in the urine and 1-30,000,000 in clear water. Dextrose, acetone, acetaldehyde do not interfere in solutions weaker than 1-30,000 and then only on heating or long standing.

The test is conducted as follows: To five c.c. of specimen contained in five-inch test tube, add .1 c.c. of 15 per cent. solution of sodium hydroxide and mix well. Then add .1 c.c. phenylhydrazine, base, not hydrochloride, finally add .7 grams of stick sodium hydroxide and agitate for ten minutes. The strength is estimated colorimetrically by comparing with the standard solutions treated in same manner as specimen, and at the same time. It is important to remember that the several reagents must be added to specimen and standard solutions at the same time; *i.e.*, specimen and standard are treated simultaneously.

Colorimetric comparisons must be made within twenty minutes after stick alkali is added. Usually comparisons are made in about ten minutes subsequent to the addition of stick alkali.

If it is desired to keep specimens for some hours previous to estimation, then the .1 c.c. of 15 per cent. solution of sodium hydroxide must be added. This addition prevents decomposition of hexamethylenamine with production of formaldehyde, which will take place in acid urine on standing. After specimen has been made alkaline as directed in method of assay, no attempt should be made to remove precipitate, as such procedure will remove free formaldehyde wholly or in part. In my experience any attempt to remove color of urine, by charcoal, precipitation, reduction, oxidation, etc., results in removal of some or all of free formaldehyde.

This test has been used with much satisfaction in a series of clinical experiments conducted at Union Protestant Infirmary by Dr. George Walker, Associate Professor of Surgery, Johns Hopkins Hospital.

In line with the above work is a recent examination of samples of whiskey submitted by Dr. Hiram Woods, Eye Specialist, of this city. Dr. Woods stated that he was at that time treating a patient almost blind, who could offer no explanation of his condition, except that he had partaken rather freely of whiskey mislabelled Sherwood Maryland Rye.

Upon investigating a sample of this brand of whiskey, it was found to be a mixture of approximately 30 per cent. methyl alcohol, about 15 per cent. grain alcohol and 55 per cent. water. This sample was tested among other tests, including specific gravity of distillates, as follows:

A test tube partially filled with sample of whiskey was heated until vapor formed in upper part of tube, into which a copper spiral heated to redness and slightly cooled in air was plunged. The characteristic odor of formaldehyde and the effect on nasal passages was observed, masked to some extent by acetaldehyde and other odors. The formaldehyde odor was much more characteristic when applied to a fraction of distillate partially freed from water by saturating with potassium citrate and distilling supernatant layer.

The specimen was further tested as follows: 100 c.c. was supersaturated with potassium citrate and thoroughly shaken. When two strata of liquid were formed, the upper measured about 44 c.c. This latter liquid was removed into a distilling bulb connected with a distillation tube having several bulbs and carrying glass beads. The liquid was heated on water bath and began to boil at 68°–70° C., the larger portion distilling over under 75° C., rising to 78° then to 85°. The mixed distillate was twice distilled over lime, practically all coming over under 78° C. This distillate was then carefully fractionated, the lower boiling point fractions being collected and refractionated until 19 c.c. of liquid boiling at 65°–66° C. was obtained. This distillate tested with copper spiral gave entirely characteristic formaldehyde effects.

Formaldehyde produced in solution by plunging heated copper spiral into portion of distillate and testing in accordance with Rimini's Test, gave entirely characteristic reaction, as also Hehner's milk test, Phloroglucin test, and Dunning's test.

Methyl salicylate was produced with salicylic acid and sulphuric acid, but only a trace of iodoform could be produced. The quantity of methyl alcohol, 96 per cent., was then estimated with a refractometer and by the method suggested by C. Simmonds in his notes on the determination of small quantities of methyl alcohol, which is here given.

Note on the Determination of Small Quantities of Methyl Alcohol.

By C. Simmonds: Analyst. 27, 16 (1912).

Small proportions of methyl alcohol have hitherto been somewhat difficult to determine readily and accurately. Fairly good approximate results can be obtained by comparative experiments with the well known method of Riche and Bardy (Compt. rend., 80, 1076, 1875), or with Wolff's modification of Trillat's process (Ann. Inst. Pasteu, 1902, 8), but these methods are lengthy and rather troublesome. The process described by Thorpe and Holmes (J. Chem. Soc., 85, 1; 1904) gives good results when the quantity of methyl alcohol is not too small. It is not well adapted, however, for use when the proportion of methyl alcohol is less than about 2 per cent. of the ethyl alcohol, since the necessary subtractive correction (loc. cit., pp. 2, 3) may in such cases be equal to or may exceed the quantity it is desired to estimate. For determining very small portions of methyl alcohol the method is quite inapplicable. In such cases satisfactory determinations can be made by applying the principle of colorimetric comparison by Deniges' process for detection of methyl alcohol (Compt. rend., 150, 332, 1910).

The possibility of thus using the process is indicated by Deniges' (loc. cit., p. 833). The object of the present note is to give the procedure which the writer finds most suitable for utilizing the reaction quantitatively in general analytical work as, for example, in examining spirituous beverages, medical tinctures, flavoring essences, and so forth.

The alcoholic mixture is best purified, when necessary, either by the method of Thorpe and Holmes (J. Chem. Soc., 83, 314, 1903), or by other suitable means. It is then diluted with water or mixed with ethyl alcohol, as the case may require, until it contains 10 per cent. of total alcohol by volume.

To 5 c.c. of this prepared liquid contained in a wide test tube

are added 2.5 c.c. of permanganate solution (2.0 grams $KMnO_4$ per 100 c.c.), and then 0.2 c.c. of strong sulphuric acid. When the reaction has proceeded about five minutes, 0.5 c.c. of oxalic acid solution is added (0.6 grams crystallized acid per 100 c.c.). On shaking the liquid becomes clear and nearly colorless. One c.c. of strong sulphuric acid is now run in and well mixed with the solution, which is finally treated with 5 c.c. of Schiff's reagent. A violet color is developed in the course of a few minutes unless mere traces of methyl alcohol were present, when twenty or thirty minutes may be required.

This color is due, of course, to the reaction of the fuchsin solution with formaldehyde, produced by the oxidation of the methyl alcohol. A sufficient quantity of sulphuric acid is present to prevent the development of color with any acetaldehyde formed from the ethyl alcohol during the oxidation.

A preliminary experiment carried out as described serves to detect the presence of methyl alcohol, if it is not already known, and to give some idea of the quantity. According to the indications thus obtained, another part of the prepared liquid is further diluted, if necessary, with ethyl alcohol of 10 per cent. strength until it contains from 0.001 to 0.004 grams of methyl alcohol in 5 c.c.; the experiment is repeated side by side with two or more standards for comparison. These contain 0.001, 0.002, 0.003, etc., gram of methyl alcohol in 5 c.c. of 10 per cent. ethyl alcohol. The colors produced are compared in small Nessler tubes (25 c.c.) or in a suitable colorimeter.

With properly sensitive Schiff's reagent, 0.0003 gram methyl alcohol in the 5 c.c. of liquid taken is readily detected. The best depths of color for comparison, however, are given by the formaldehyde produced in the manner described from quantities of 0.001 to 0.004 gram of methyl alcohol.

It is convenient to keep a standard solution (1 gram per liter) of methyl alcohol in 10 per cent. ethyl alcohol. This is diluted as required with 10 per cent. alcohol to form the standards for comparison. This proportion of ethyl alcohol (10 per cent.) is a suitable strength for general work, as the distillates ordinarily obtained are stronger, and can be diluted down instead of having to be concentrated.

The process has the advantage of (1) being rapidly executed, (2) requiring only a small quantity of material, and (3) being

directed applicable to weak distillates. The degree of accuracy obtainable is shown by the following results of a typical series of experiments:

Grams methyl alcohol per 100 c.c.							
Present	0.005	0.028	0.044	0.072	0.100	0.500	1.000
Found	0.004	0.029	0.046	0.072	0.104	0.492	0.968

Formaldehyde, of course, must be absent from the unoxidized solution of the alcohols, or else its effect must be determined and allowed for. Glycerol must also be absent.

The method of purification referred to is for the purpose of getting rid of other volatile substances, such as ether, chloroform, benzene, essential oils, etc.; 25 c.c. of the sample are diluted in a separatory funnel with water to 100–150 c.c.; enough salt added to saturate the solution which is then shaken vigorously for five minutes with 50–80 c.c. of light petroleum (boiling below 60°), allowed to stand 0.5 hour, the lower layer drawn off and again extracted if necessary, the petroleum extracts washed with 25 c.c. of saturated salt solution, the wash waters added to the main bulk of liquid which is then neutralized if necessary and 100 c.c. distilled over. Experiment has shown that all of the alcohol is recovered in the first 100 c.c. of distillate.

Note by author of this paper. Sensitive fuchsin bisulphite solution is readily made according to the following formula: In 100 c.c. of a saturated solution, less than 1 per cent. of basic fuchsin, dissolve sodium bisulphite 10 grams and when nearly colorless mix with purified animal charcoal and filter, a perfectly clear colorless solution should result.

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PROGRESS IN PHARMACY.

A Quarterly Review of Some of the More Interesting Literature Relating to Pharmacy and Materia Medica.

By M. I. Wilbert, Washington, D. C.

The Pharmaceutical events of the year, the meetings of the American Pharmaceutical Association and of the National Association of Retail Druggists, have passed into history but will long be

remembered as being epoch-making in that the associations have undertaken to develop activities heretofore generally ignored.

The American Pharmaceutical Association at its meeting in the City of Nashville during the week of August 18th established a commission to study and to report on the uses and limitations of proprietary remedies.

The National Association of Retail Druggists at its meeting in the City of Cincinnati the following week devoted considerable time to the discussion of the proposed Federal antinarcotic legislation, and while in a general way, the Association endorsed the work of the National Drug Trade Conference, a number of exceptions to the so-called Harrison Bill, H. R. 6282, now pending in Congress, were taken, and the Committee on National legislation was instructed to bring these exceptions to the attention of persons interested.

Many of the State Pharmaceutical Associations have already held their annual sessions and from the published reports in drug and other journals the meetings this year have been more than usually successful. Several of the state associations report material accessions to their membership and at all of the meetings this year the interest in organization work appears to have been well maintained.

Drug Plant Exhibition.—The annual meeting of the American Medical Association was referred to at some length in a previous number of this JOURNAL (August, p. 380) but the account failed to call attention to the unusually interesting exhibits of a scientific nature. From a pharmaceutical point of view the collection of drugs, growing as well as dried, made by the Department of Pharmacy of the University of Minnesota was of greatest interest. It was particularly unfortunate that this really excellent collection of material was not shown in connection with other exhibits in the main building so as to have been available for study by a greater number of visiting members of the A. M. A.

The Association of Food, Dairy and Drug Officials held its annual meeting at Mobile, Alabama, June 16 to 20, 1913. To the pharmacists of the country the annual meetings of this Association should be of immediate interest though the proceedings are but seldom reported in drug journals and very infrequently indeed commented on by pharmacists themselves. From a report of the proceedings for this year (The American Food Journal, July, 1913),

it appears that a propaganda for education and co-operation is to be instituted in connection with the enforcement of Federal and State Food and Drug Laws and that the individualism so frequently manifested heretofore will give way to concerted action on the part of all concerned.

A discussion on the substandard clause of the National and many of the State laws relating to drugs elicited general condemnaton of this provision and the suggestion that all drugs should be required to conform with adopted standards.

The British Pharmaceutical Conference held its 50th Annual Meeting in London the week of July 21, 1913, and from the reports published in British pharmaceutical journals, the meeting was from all points of view most successful. The papers read in the two sections were of the usual high quality and constitute a valuable contribution to pharmaceutical literature. Some of the foreign guests to the Jubilee Meeting contributed to the scientific section of the conference and all took an active part in the discussion of the several papers that were presented. . . . P.-van der Wielen, the representative of the Pharmaceutical Society of Holland, presented a paper on standardization of opium for pharmaceutical purposes in which he recommends the adoption of a normal opium standardized for morphine, narcotine, codeine and meconic acid.

Pharmacopœia Revision, British.—Umney, John C. (*Pharm. J.*, 1913, v. 91, pp. 162-172), in the presidential address before the British Pharmaceutical Conference, presented a comprehensive review of conditions under which national pharmacopœias are produced in other countries and a comparison of these conditions with the methods which prevail in Great Britain. Also made a plea for the statutory recognition of pharmacists as co-revisors with medical men in the production of the British Pharmacopœia.

The report of the Pharmacopœia Committee of the General Medical Council states in part: (*Chem. & Drug.*, 1912, v. 82, p. 884): Six sections of the draft text of the new Pharmacopœia have now been prepared by the editors, and are undergoing revision by the committee, with the help of the several Committees of Reference. The greater part of the work is ready to go to press. A further report by the Committee of Reference in Pharmacy, containing suggestions relating to the formulæ for official ointments, has been received, and will be published shortly.

International Pharmaceutical Congress.—Anon. (*Pharm. J.*,

1913, v. 90, p. 831). More than 500 applications for membership have already been received for the 11th International Pharmaceutical Congress to be held at The Hague from September 21 to September 27. The proceedings promise to be interesting, both from the social and business points of view.

The preliminary program for the Congress enumerates a large number of important subjects for discussion in the five sections into which the Congress is to be divided. The meetings are to be held under the august patronage of His Royal Highness, Prince Henry of the Netherlands, and pharmacists who are interested may register as patrons (25 florins) or as ordinary members (10 florins) by sending the required amount to the Secretary, J. J. Hofman, Schenkweg 4, The Hague, Holland.

Hygienic Laboratory Bulletin No. 88, recently published, outlines a method for determining *the toxicity of coal-tar disinfectants* together with a report on the relative toxicity of some commercial disinfectants. The author, Worth Hale, expresses the opinion that from a physiological point of view it follows that if a substance when introduced into the body, and acting chemically, injures or interferes in any degree with the normal physiological processes it should be classed as a harmful agent and hence a poison. All poisonous substances should be classified according to the degree of their toxic action and power to cause either late or immediate death. The Bulletin reports a systematic study of 80 disinfectants 23 of which were labelled, either directly or by inference, as being free from poisonous properties. All of the preparations were found to be poisonous to guinea pigs, cats and mice, though the degree of relative toxicity varied from 5 to 90 per cent. of that of phenol.

Council on Pharmacy and Chemistry.—Sollmann, Torald. (*J. Am. Med. Assoc.,* 1913, v. 61, p. 5-7). Yesterday, to-day and to-morrow, a review of the activities of the Council on Pharmacy and Chemistry. The publication of New and Nonofficial Remedies and the production of an authoritative compend of therapeutically active drugs.

Local Formularies.—Anon. (*Pharm. J.,* 1913, v. 90, p. 863). A number of local organizations in different parts of Great Britain have issued local formularies based upon the B. P. Codex to cover the preparations largely prescribed in the particular locality.

Patent Medicines.—Anon. (*Chem. & Drug.,* 1913, v. 82, pp. 943-944). Members of the Select Committee of Parliament on

patent medicines are credited with having conducted the patent medicine inquiry with great thoroughness. One thing which appears tolerably certain is that the Committee will recommend the prohibition of advertisements of "cures" for cancer and consumption. They will also advocate a much stricter control over the sale of remedies for female ailments and the total suppression of the public supply of abortefacients.

Patent Medicine Revenue.—Anon. (*Chem. & Drug.*, 1913, v. 83, p. 45). The Chancellor of the Exchequer is quoted as stating that the amount of the loss in the estimated revenue from patent medicines this year, compared with the actual revenue last year, is about £50,000.

Hypnotic Drugs Classed as Poisons.—Anon. (*Pharm. J.*, 1913, v. 90, p. 772). Various hypnotic drugs are now included in part 2 of the British Schedule of Poisons. The words actually added to the Schedule are as follows: "Diethyl-barbituric acid and other alkyl, aryl, or metallic derivatives of barbituric acid, whether described as Veronal, Proponal, Medinal, or by any other trade name, mark, or designation; and all poisonous Urethanes or Ureides."

Veronal as a Poison.—Bennett, Ernest H. G. (*Chem. & Drug.*, 1913, v. 83, p. 66). Veronal promises to be a fashionable poison for would be suicides. Recently observed cases suggest the desirability of transferring this substance from part 2 of the poison schedule to part 1 and thus render it more difficult to purchase except with a prescription.

Improper Containers.—Murray, B. L. (*J. Am. Pharm. Assoc.*, 1913, v. 2, p. 446). Many chemicals deteriorate rapidly for lack of proper containers, and greater care should be exercised in insisting that chemicals, particularly chemicals for pharmaceutical and analytical purposes, be properly packed.

The Interpretation of U. S. P. Assay Processes.—Taylor, Frank O. (*J. Ind. & Eng. Chem.*, 1913, v. 5, pp. 601–604). Conditions surrounding the assay of drugs and preparations, by different men, cannot always be the same and variation may occur for a number of reasons. The carrying out of the assay processes of the U. S. P. must be done with a clear vision of the end to be attained and a thorough understanding of the many pitfalls in the way of the chemist.

Glass Stoppers, Loosening.—Steensma, F. A. (*Chem. Weekblad*, 1912, v. 9, pp. 894–896). When the usual methods of loosening

glass stoppers do not avail, a small quantity of ether poured on the neck of the bottle so that the ether may penetrate as much as possible between the stopper and the neck, then warming the outer side of the neck with warm water, will frequently loosen the stopper.

Diuretic Drugs.—Christian, Henry A. (*J. Am. Med. Assoc.*, 1913, v. 61, p. 267), reports some experimental work to determine the value of diuretic drugs in acute experimental nephritis. The results, while too limited to be conclusive, are suggestive and indicate the need of careful reexamination of the effects of various diuretics in nephritis with the methods now available for testing renal function.

Nitrogen, Determination of.—Rosenbloom, Jacob. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 87-88). A method for the estimation of total nitrogen and ammonia nitrogen in urine. The method depends on the fact that when a neutral solution of an ammonium salt is treated with formaldehyde, combination occurs with the formation of hexamethylenetetramine and the liberation of a corresponding amount of acid which can be titrated with tenth-normal sodium hydroxide.

Ash and Moisture Constants of Powdered Vegetable Drugs.—Thurston and Thurston. (*J. Am. Pharm. Assoc.*, 1913, v. 2, pp. 474-476). A report in the form of a table giving the water content, ash content, and the nature of the ash found in a number of the official and unofficial drugs.

The Valuation of Chocolate.—Kühl, Hugo. (*Suedd. Apoth. Ztg.*, 1913, v. 53, pp. 214-216). For the chemical determination of adulterations in chocolate it is necessary to determine the ash content, the fat content, the nature of the fat and the sugar content. Corn starch can be recognized by means of the microscope, as can powdered cacao nibs.

Salicylic Acid.—Hewlett, A. W. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 319-321), reports on the clinical effects of "natural" and "synthetic" sodium salicylate. The variations in action shown by the tabulated statistics of the comprehensive report are surprisingly small. Allowing for statistical error, one must conclude that natural and synthetic sodium salicylate are indistinguishable so far as their therapeutic and toxic effects on patients are concerned.

Methyl Alcohol.—Editorial. (*J. Am. M. Assoc.*, 1913, v. 61,

p. 126). The close chemical relationship and the similarity in physical properties and behavior of methyl and ethyl alcohol have made it difficult to believe that they could be so distinct and unlike in respect to their toxicity. A growing collection of evidence is making it manifest, however, that in small, frequently repeated doses methyl alcohol is far more poisonous than is ethyl alcohol. A single large dose of the latter may, however, provoke a more toxic manifestation than does methyl alcohol. It would appear as if methyl alcohol, administered in small repeated quantities, brings about a cumulative effect.

Antiluetin.—Anon. (*Suedd. Apoth. Ztg.*, 1913, v. 53, p. 440). Antiluetin, the bitartrate of potassium-ammonium-antimony oxide, is being introduced as a substitute for salvarsan, it being thought that the use of the less poisonous antimony in place of arsenic in organic combination might be of advantage. It has been extensively experimented with in the hospitals of Japan.

Aqua Destillata.—König, F. (*Apoth. Ztg.*, 1913, v. 28, p. 383). It has been repeatedly shown that sterilized distilled water, even within several days, contains bacterial vegetation and that such germ-laden water is not safe for use in connection with solutions that are to be introduced intravenously as the solutions, even after sterilization, will of necessity contain killed organisms and the chemical products generated by them.

Argulan is mercuric dimethyl-phenyl-pyrazolone containing 46.8 per cent. Hg, and is reported to be a very useful antisyphilitic (*Chem. & Drug.*, 1913, v. 82, p. 945).

Asafœtida.—Greenish, Henry G. (*Pharm. J.*, 1913, v. 90, pp. 729-731). Asafœtida is exported chiefly from the Persian Gulf ports, and from Bombay. That which reaches London comes almost entirely from the Persian Gulf, though small quantities may be transshipped to London at Hamburg. Much of that sold on the London market is reexported to the United States, Canada, South Africa, and the Continent. Comparatively little of the drug is in fine tears with a uniform waxy fracture.

Bromides.—Greene, Charles W. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 271–273), reports a study to determine the responses of the heart to bromide perfusion. The inorganic bromides are relatively indifferent to such organs as the heart of the cold-blooded vertebrates. On the hearts of warm-blooded animals the bromides are in the long run sharply depressant. From a review of the literature

the authors conclude that many of the so-called bromide therapeutic effects are distinctly chargeable to the base with which the bromide has been combined.

Calcium Chloride.—Anon. (*Suedd. Apoth. Ztg.*, 1913, v. 53, p. 261). Attention is called to the greatly increasing use of calcium chloride bread for the administration of calcium chloride.

Cannabis Indica.—Anon. (*Suedd, Apoth. Ztg.*, 1913, v. 53, p. 423). The Egyptian Government has prohibited the importation of cannabis indica and is taking active steps to prevent smuggling of this narcotic.

Coca.—Anon. (*Suedd, Apoth. Ztg.*, 1913, v. 53, p. 367). Peru has long since lost its claim as the home of erythroxylon coca. The plant is being cultivated in many of the other South American countries, Bolivia, Ecuador, Columbia, and also Brazil. It is also produced in quantities in the West Indies, Java, and Ceylon. According to recent reports the Java planters are to undertake the manufacture of crude cocaine.

Colocynth.—Roe, R. B. (*Pharm. J.*, 1913, v. 90, p. 800 [Lancet, May 31, 1913]), reports a case of poisoning by colocynth in which a woman of 25 years took 75 grains of powdered colocynth. Vomiting and diarrhœa were the principal symptoms during the acute period. This drug appears to be uncertain in its action, the smallest fatal dose for a human being on record is 60 grains, but recovery is recorded to have taken place after 3 ounces.

Diplosal.—Council on Pharmacy and Chemistry of the A. M. A. (*J. Am. Med. Assoc.*, 1913, v. 61, p. 121). Diplosal is the salicylic ester of salicylic acid. It is obtained from salicylic acid or salicylates by the action of suitable condensing agents. Diplosal occurs as a white, crystalline powder, practically free from odor and taste. It melts at 147-148° C. It is almost insoluble in water, but is easily soluble in ether and benzene. It is soluble in alkaline solutions, with formation of alkali salicylate. Diplosal may be given in single doses of 0.5 to 1 gm.

Diplosal, Toxicity of.—MacLachlan, John. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 116-117), reports on the toxicity of diplosal. The author concludes that diplosal is, like all of the salicylates, toxic, if given in large doses; and that it does require much smaller doses to produce the toxic effect.

Emetine Hydrochloride.—Council on Pharmacy and Chemistry of the A. M. A. (*J. Am. Med. Assoc.*, 1913, v. 61, p. 27), emetine

hydrochloride, the hydrochloride of an alkaloid found in *Cephaelis ipecacuanha,* occurs as a white, crystalline powder, soluble in water and alcohol. The aqueous solution of emetine hydrochloride is practically neutral toward litmus. The general alkaloidal reagents precipitate emetine, even from dilute solutions. Alkalies precipitate it from aqueous solutions of its salts. Emetine is said to act similarly to ipecac, but is relatively more nauseant and less emetic.

Ergot.—Crawford and Crawford. (*J. Am. Med. Assoc.,* 1913, v. 61, pp. 19-23). The cock's comb test for the activity of ergot preparations, with report of a number of experiments made with hydroxyphenylethylamin.

Glycyrrhiza.—Anon. (*Chem. & Drug.,* 1913, v. 82, pp. 773-774). The collection of licorice root in Turkey and Russia has been developed into a flourishing industry by an Anglo-American concern. A considerable proportion of the licorice gathered is used for flavoring tobacco in the United States. In Syria the licorice plant, *Glycyrrhiza glabra,* is not cultivated, but is found growing wild in large quantities, usually in stretches of open land where the soil is of a damp and marshy character. It is regarded by the natives as a serious pest, greatly interfering with cereal cultivation.

Hedeoma.—Macht, David I. (*J. Am. Med. Assoc.,* 1913, v. 61, pp. 105-107). A case of poisoning by oil of pennyroyal; with report of some experimental observations, from which the author concludes that the so-called emmenagogue oils are by no means innocuous substances, and do not deserve the place among the official pharmacologic preparations which many of them hold.

Hydrastis.—Anon. (*Suedd. Apoth. Ztg.,* 1913, v. 53, p. 240). Fluid extract of hydrastis precipitates readily and the precipitate usually carries down with it some of the contained alkaloids.

Hygralon is the name given to a mercury-potash soap prepared from cocoanut oil with 30 per cent. metallic mercury, which is said to be an efficient substitute for blue ointment as an antisyphilitic inunction (*Chem. & Drug.,* 1913, v. 28, p. 945.)

Lactopeptine.—Puckner, W. A. (*J. Am. Med. Assoc.,* 1913, v. 61, pp. 358-359). A report on the re-examination of lactopeptine, which confirms the findings of the Council on Pharmacy and Chemistry published some six years ago.

Magnesium Sulphate.—Anon. (*Pharm. J.,* 1913, v. 90, p. 719). A case of death by poisoning from Epsom salts is reported.

It is thought that the patient, a woman, had taken over 4 ounces of the drug at one dose.

Nitroglycerin.—Cornwall, Edward E. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 118-120). Nitroglycerin should never be used for the primary purpose of a heart stimulant. When given under the tongue it produces almost as prompt an effect as when injected under the skin. The chief contra-indications to the use of nitroglycerin are (1) low or relatively low blood pressure; (2) advanced chronic nephritis with very high blood pressure and toxemic conditions producing high blood pressure, as a rule; and (3) the presence of an idiosyncrasy in regard to its action.

Nux Vomica.—Hjelt, W. (*Apoth. Ztg.*, 1913, v. 28, p. 415 [*Farmaceutiskt Notisblad*, 1913, No. 10]). Nux vomica extracted with menstrua containing from 20 to 70 per cent. of alcohol was found to yield tinctures that contained essentially the same amount of alkaloids though the extract content in the tinctures made with low percentage alcohol was much higher than that of the tinctures made with stronger alcohol.

Opium.—Anon. (*Chem. & Drug.*, 1913, v. 83, p. 56). The Chinese Government has requested that the opium accumulated at Chinese ports be reshipped to non-Chinese markets and has offered to pay the freight. No final decision has as yet been come to by the British Government.

Opium, Production of.—Anon. (*Suedd. Apoth. Ztg.*, 1913, v. 53, pp. 263-264). An article by R. Millant on the production of opium in Turkey states that there are at the present time 3 markets for this opium, Smyrna, Constantinople and Salonica, that receive their opium from the adjoining country.

Phenolsulphonephthaelin.—Goodwin, Charles. (*J. Am. Med. Asoc.*, 1913, v. 61, pp. 184-189). The use of phenolsulphonephthalein in estimating the functional activity of the kidneys. The intravenous injection of the substance is not as satisfactory as when it is given by mouth. It frequently gives information that is of considerable value.

Potassium Permanganate, as an Anæthetic.—Barton, Wilfred M. (*J. Am. Med. Assoc.*, 1913, v. 61, pp. 196-197). A preliminary communication in regard to potassium permanganate as a local anesthetic to the genito-urinary mucous membranes; with a report of several cases. It has no perceptible action on the skin.

Salvarsan.—Wadhams, S. H. (*J. Am. Med. Assoc.*, 1913, v.

61, pp. 385-386). A report of three cases of amebic dysentery successfully treated with salvarsan.

Santonica.—Anon. (*Chem. & Drug.*, 1913, v. 82, p. 950). Genuine worm seed (*Artemisia maritima*) only occurs in Russian Turkestan, in the region bounded on the east by the mountain chain of the Kara-Tau, and on the west by the river Syr Darja. Up to 15 years ago the Kirghiz collected the seed and sold it where they could obtain the best prices. In recent years the Russian Government has divided the region into 5 districts, and leased the right of collection for 1 year to the highest bidder in public auction.

Santonin-free Santonica.—Enz, K. (*Apoth. Ztg.*, 1913, v. 28, pp. 514–515), describes the santonin-free santonica now appearing on the European market.

LaWall, Charles H. (*J. Am. Pharm. Assoc.*, 1913, v. 2, pp. 596-597). A drug corresponding closely in appearance with the official santonica was found to contain not more than a trace of santonin.

Strophanthinic Acid.—Sieberg, E. (*Ber. Pharm. Gesellsch.*, 1913, v. 23, pp. 278-290). Strophanthinic acid has been isolated from the three best known varieties of strophanthus. The substance occurs as a white, amorphous mass that in solution reddens litmus paper and in aqueous suspension combines with alkalies and alkali carbonates with liberation of carbon dioxide. It may be titrated with alkalies by the use of phenolphthalein as an indicator. The probable formula of strophanthinic acid is $(C_{21}H_{34}O_{10})_4$.

Turpentine.—Blackwood, J. Douglas. (*J. Am. Med. Assoc.*, 1913 ,v. 61, pp. 412-413), reports a case of turpentine poisoning with a scarlatinoid rash, in addition to the ordinary symptoms of turpentine poisoning.

THE 1913 MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The 61st Annual Convention of the American Pharmaceutical Association was held in the city of Nashville, August 18–23, 1913, and the members of the Association who had the privilege of taking part in the proceedings will long remember the warm welcome, the kindly hospitality and the consistent efforts to please that

were manifested on the part of Nashville druggists and their friends.

While the Nashville meeting will not be recorded as record-breaking so far as attendance is concerned, the total registration aggregrated 397 and practically all sections of the country were represented. Despite the unusually hot weather which prevailed during the week, the attendance at the several sessions of the Association and of the different sections was unusually good. The meeting rooms were large and roomy and everything that the members of the local committee could do to make the stay of members of the A. Ph. A. comfortable and pleasant was done. The opening sessions of the Associations and many of the subsequent meetings of the several sections were held in the rooms of the Masonic Grand Lodge building, within a few minutes walk of the Hotel Hermitage, the official headquarters. The sessions of the Council, meetings of special committees and some of the section sessions were held in the hotel itself.

The first session of the Association was formally opened by President W. B. Day, on the afternoon of August 18th. In the absence of the Governor of Tennessee, his Secretary, Robert S. Henry, welcomed the members and delegates to Nashville. R. W. Vickers, of Murfreesboro, Tennessee, extended a welcome on behalf of the pharmacists of that State and these several addresses were replied to by Joseph P. Remington in his usual happy vein.

The address of the President contained a number of recommendations of policy and discussed at some length the relations of pharmacy to the manufacture and use of nostrums and the abuse of habit-forming drugs. In commenting on the attitude of pharmacists toward the so-called "patent" medicines, he said in part: "These proprietaries are secret in composition and secrecy in formula is frequently acompanied by extravagant exploitation. In some cases the patient is injured by the formation of drug habits, in others by the excessive or ill-advised use of potent drugs, while if no other ill effects are experienced, there is often a waste of valuable time devoted to 'trying out' a much vaunted cure, during which the opportunity for successfully combating the disease is lost. . . . At best the pharmacist has no opportunity to show his skill but merely hands out a package of ready made medicine of whose composition he knows little or nothing and perhaps assumes the responsibility for recommending it in the treatment of disease of whose nature he is equally ignorant.

"At this time we should do no less than emphatically restate our steadfast opposition to nostrums of all descriptions. This Association has constantly opposed quackery and fraud in medicine and should pledge its cordial support to the efforts which the American Medical Association is making to overcome these twin evils."

At the second session the Association authorized the appointment of a council or commission on proprietary medicines to consist of five members whose duties it will be to investigate and report on various proprietary medicines sold in the United States and their percentage of alcohol and of habit-forming drugs.

The members of this council, as announced at the final meeting of the Association, are Thos. F. Main, of New York, to serve for one year, Jas. H. Beal, of Scio, Ohio, to serve for two years, M. I. Wilbert, of Washington, D. C., to serve for three years, John C. Wallace, of Newcastle, Pa., to serve for four years, and Chas. Caspari, Jr., of Baltimore, Md., to serve for five years. Jas. H. Beal was elected chairman.

The progress in pharmacy as recorded by this meeting is largely reflected by the creation of this Commission on Proprietary Remedies and by the series of resolutions endorsed at the final session of the Association.

To the disinterested observer who was limited in his sources of information to the reflections manifested in the papers read before the section on education and legislation and the discussion at the joint conference of this section with members of boards of pharmacy and teachers in pharmaceutical schools, it would appear that from an educational point of view the meeting this year was particularly uneventful. This fact when compared with the very decided progress reported in connection with medical education, at the meeting of the American Medical Association at Minneapolis in June is to be deplored. It should not be overlooked, however, that at the second meeting of the Section on Education and Legislation a commitee was appointed to consider the standardization of a three-year course in pharmacy. Owing to lack of time and some doubt as to what was expected the members of the committee were unable to formulate a report and on motion this committee was continued to report next year. It is of course not necessary to add that the members of this committee have an excellent opportunity to call attention to the prospective needs of pharmacy and

the possibility of developing it as a recognized specialty of medicine.

The report of the nominating committee at the second general session of the Association brought with it probably the most unusual demonstration that has ever been witnessed at a meeting of the American Pharmaceutical Association. The nominations for president included the names of Chas. Caspari, Jr., of Baltimore, Caswell A. Mayo, of New York, and Otto Raubenheimer, of Brooklyn. Professor Caspari, who had served the Association for a number of years as General Secretary asked permission to withdraw his name. This request was opposed by John Uri Lloyd and others who asserted that the members of the Association desired the opportunity of showing their appreciation of the services that had been rendered by Prof. Caspari. The members present, in the course of the address made by Prof. Lloyd, frequently evidenced their appreciation of the sentiments expressed and at the close of the remarks continued their applause for a considerable time. Despite the evident desire of the members present that he continue as a candidate, Prof. Caspari insisted that his name be withdrawn and James H. Beal, the Secretary of the Association put in nomination the name of W. C. Anderson, of New York. This nomination was seconded by John C. Wallace, of New Castle, Pa., and Otto F. Claus, of St. Louis. No other names being offered, nominations were on motion closed and the members of the Association will have the rather unusual opportunity of selecting a president from nominees resident in the same city. As a matter of more than passing interest it may be pointed out that all of the nominees are comparatively young men though well and favorably known to pharmacists generally.

Caswell A. Mayo, who was the first to be placed in nomination, is well known as the Editor of the American Druggist. He joined the American Pharmaceutical Association in 1893 and has served as member of the council and as secretary of the Historical Section. At the Denver meeting he was elected to serve as historian and is active in that capacity at the present time. Otto Raubenheimer, a man of many attainments, editor of the Practical Druggist, member of the U. S. P. Committee of Revision, the Committee on National Formulary, the Committee on Unofficial Standards, and the Committee on Recipe book, is the original and at present the only American professor of the history of pharmacy, having been recently elected to fill that chair in the School of Pharmacy of the

University of the State of New Jersey. He was elected to membership in the American Pharmaceutical Association in 1902, and has served as Secretary and as chairman of the Section on Historical Pharmacy and as chairman of the Section on Practical Pharmacy and dispensing. William C. Anderson, Professor of Pharmacy in the Brooklyn College of Pharmacy, is well known to the retail druggists of the country, having served as president of the National Association of Retail Druggists and as chairman of the National Committee of formulas of the American Druggists' Syndicate. He was elected to membership in the American Pharmaceutical Association in 1900 and has served as Secretary of the Section on Commercial Interests.

The Section on Scientific Papers presented a rather comprehensive programme including a total of fifty-six communications and covering practically all phases of scientific pharmacy. Among the more interesting of the communications was one by H. M. Gordin and Jay Kaplan on the comparative adsorption of different substances by Lloyd's reagent; animal charcoal and aluminum hydroxide. This paper was read by Prof. John Uri Lloyd, who also presented a short paper of his own and exhibited a number of samples of adsorbed alkaloids which were practically tasteless. He also exhibited a number of samples of alkaloids produced by means of his reagent. In the course of the discussion on this subject it was pointed out that pharmacists frequently lose sight of the possibilities of physical phenomena and that filtering media such as kaolin and fuller's earth when used in connection with liquid preparations containing alkaloids would serve to materially reduce the alkaloid content of such preparation.

A paper by L. F. Kebler on the lack of uniformity in tablets, emphasized the need for greater care in the manufacture of this class of preparations. The discussion on a paper by William Mansfield on papain of commerce called renewed attention to the difficulties encountered in any attempt to standardize little used drugs or preparations and suggested the desirability of restricting work of this kind to the more important generally recognized remedies that are widely used.

The Section on Practical Pharmacy and Dispensing presented a programme containing a total of thirty-one communications, and several, at least, of these papers contained points of practical value and elicited considerable discussion. A paper by J. Leon Lascoff

on camphorated oil in ampoules involved a discussion on sterilization which evidenced the fact that at the present time the importance of this procedure is not always properly recognized by the pharmacist.

The Section on Education and Legislation had several sessions largely devoted to the discussion of laws relating to poisons and habit-forming drugs. A paper by B. L. Murray on some aspects of our poison laws discussed the nature of poisons and suggested the desirability of adequately defining a poison. The report of the delegates of the American Pharmaceutical Association to the American Drug Trade Conference was followed by a paper by Frank H. Freericks on the National Drug Trade Conference and the so-called Harrison antinarcotic bill, in the course of which Mr. Freenicks submitted a number of resolutions which, after considerable discussion, were referred to the house of delegates, but evidently failed to receive the endorsement of that body.

A paper on the standardization of a three-year course by H. L. Taylor was practically the only contribution along educational lines. This paper, as noted above, was referred to a special committee to report next year.

In the section devoted to the discussion of pharmacopœias and formularies, the Chairman of the Committee of Revision of the Pharmacopœia of the United States presented a comprehensive report on proposed changes in the Pharmacopœia, and also ventured the statement that the new Pharmacopœia was now 90 per cent. complete and that printing would probably begin in the very near future.

The Chairman of the Committee on National Formulary reported that the members of the Committee present at Nashville had held several meetings and that the work of revision was practically completed so far as formulas were concerned. He also presented a copy of the completed draft of the Formulary.

The Chairman of the Committee on Unofficial Standards reported that monographs for many of the drugs needed in the formulas of the National Formulary, and not included in the Pharmacopœia, had been prepared and that the few remaining monographs would be ready in the very near future, thus practically completing the work of revision.

The sterilization of apparatus and of pharmaceutical preparations was considered in connection with several communications

presented this year, but was discussed at quite some length by Dr. A. B. Hitchins in a lecture before the Section on Pharmacopœias and Formularies. This communication and the discussion that followed emphasized the impracticability of outlining a reliable procedure for sterilizing articles of any kind without adequate bacteriologic control. The nature and extent of this control is of course dependent on the uses to which an article is to be put and the only really safe authoritative direction for sterilization is one similar to the one now embodied in the new German Pharmacopœia which directs that: "The sterilization of receptacles, medicines and surgical dressings is to be done according to the rules of bacteriologic technique with proper consideration of the properties of the articles to be sterilized."

The Section on Commercial Interests had a rather limited programme, a greater portion of the time of the session being devoted to a lecture by Ben R. Vardaman on the art and science of making a sale, which was much appreciated by the members present.

Considerable opposition on the part of female as well as male members of the Association was evidenced in connection with the newly created women's section of the American Pharmaceutical Association. It was pointed out by several members that the purpose of this section could be construed as discriminating against women who have shown their ability to cope with men in all lines of pharmaceutical activity and are well able to take part in the proceedings of the now existing sections of the Association. The large proportion of non-members of the American Pharmaceutical Association who took part in the proceedings of the section this year also suggested to some the desirability of renaming the section and forming a women's auxiliary to the Association rather than a section devoted to professional representation on the part of women pharmacists.

The following resolutions, favorably reported on and endorsed by the Committee on Resolutions of the House of Delegates, the members of the House of Delegates, and the members of the Council of the American Pharmaceutical Association, were adopted by practically the same persons acting as the American Pharmaceutical Association at the concluding session on Saturday, August 23d:

That the U. S. Department of Agriculture be urged to collect, and maintain a collection of plants which shall be used to authenticate the various drugs used in pharmacy;

That a committee be appointed to consider the practicability of devising a blank certificate of award for A. Ph. A. membership prizes by colleges of pharmacy, and state boards of pharmacy;

That the A. Ph. A. endeavor to secure and to enforce laws requiring that each pharmacy and drug store have on hand a copy of the latest editions of the Pharmacopœia of the United States and of the National Formulary;

That the American Pharmaceutical Association favors the further development of professional education;

That the Association endorses the enactment of laws restricting the sale of methyl alcohol;

That the members of the American Pharmaceutical Association present at this meeting are heartily in favor of securing a building to be used as the official headquarters of the Association;

That the Association urge the passage of the Macon-Hughes Bill for the better treatment of members of the Hospital Corps of the U. S. Army;

That the members present approve of the production of an official button;

That the "zone" system of parcel post be endorsed;

That efforts be made to lessen the number of poisoning cases from the use of poisonous tablets intended for external use;

That the U. S. P. and the National Formulary Committees of Revision be requested to indicate in some way all toxic drugs;

That the members of the Association present favor a radical revision of existing patent and trade-mark laws;

That the Association endeavor to secure a revision of the existing Internal Revenue laws, so as to provide for a drug store license distinct from the present liquor dealers' license;

That the American Pharmaceutical Association is heartily in favor of greater uniformity in so-called antinarcotic laws;

That the members of the American Pharmaceutical Association extend to Messrs. Harrison, Wright and others, their appreciation of work done in connection with the proposed law to restrict interstate traffic in opium, cocaine, their alkaloids, derivatives and preparations;

That the members of the American Pharmaceutical Association heartily endorse the provisions of H. R. 6282, as referred to the Committee on Finance of the Senate of the United States;

That there is a great need for reform in the matter of phy-

sicians dispensing poisons and drugs which are exempted from the regulations placed upon drugs dispensed by pharmacists;

That an effort should be made to secure the enactment of state laws doing away with such exemptions;

That Section 7 of the Food and Drugs Act, June 30, 1906, be amended to restrict deviations from the official standards;

That the several revision committees be requested to include synonyms in the U. S. P. and N. F.;

That efforts to secure greater uniformity in pharmacopœial nomenclature be endorsed, and that the delegates to the International Congress of Pharmacy be instructed to favor the appointment of a commission to secure international uniformity.

The Secretary of the Association was on motion instructed to forward a telegram to the Committee on Finance of the Senate of the United States and to Representative Francis B. Harrison, advising that the A. Ph. A. had endorsed the act known as R. H. 6282 and was heartily in favor of its passage at the present session of Congress.

The Committee on the Procter Monument Fund reported that the necessary funds to insure the erection of the monument in the Smithsonian grounds at Washington, D. C., were now in hand and recommended that a committee of seven be named to complete arrangements for the erection of the monument and to pass on the models of the sculptors that may be submitted. After some discussion it was on motion agreed that the present committee be continued with instructions to select an executive committee of seven members to have immediate charge of the erection of the monument.

The meeting of the American Pharmaceutical Association in 1914 is to be held in the City of Detroit. Mr. Leonard A. Seltzer, one of the more aggressive pharmacists of that City and a member of the Michigan Board of Pharmacy, was elected to serve as Local Secretary.

Albert B. Lyons, of Detroit, Michigan, was elected Honorary President.

In concluding this brief review of the proceedings, it may be pointed out that the meeting of the American Pharmaceutical Association at Nashville has once more demonstrated the impracticability of holding the interest of members by the presentation of a discontinuous program according to which sessions of the several

sections are to be held at varying times in widely separated rooms.

With the elimination of the antiquated provisions of the by-laws requiring that certain meetings be held at certain times it is to be hoped that the program will be arranged to provide for continued meetings of sections at a time and place previously arranged for and announced on the printed program. A serious effort in the direction of simplification of the proceedings might well be made on the authority of a motion made by H. P. Hynson, which authorizes the council to take up the matter of creating a conference committee for the bringing about of a closer coöperation in regard to the programs of the various affiliated organizations. If in addition to this some of the now evidently unnecessary duplication of work were eliminated much time for profitable discussion on timely topics might be gained.

Many years ago a proposition was made that the important business could well be conducted in two general divisions or sections, theory and practice, that the meetings of these divisions be continued during the day only and that the council and the affiliated organizations have their meetings at night. A practical application of this suggestion accompanied by a further elaboration of the duties of the council and the elimination of the so-called House of Delegates would appear to offer possibilities for practical advances well worth considering. M. I. W.

BRITISH PHARMACEUTICAL CONFERENCE.

By John K. Thum, Ph.G.,
Pharmacist at German Hospital, Philadelphia.

The 1913 meeting of the British Pharmaceutical Conference was held in London, the Sessions of the Conference commencing Tuesday, July 26. The attendance was greater than at any previous meeting in the history of the Conference, this, no doubt, being brought about by the fact that this meeting was the fiftieth and the Jubilee of the Conference.

While the various papers read at the Conference were of an unusually high order of merit and quite in keeping with past traditions of this organized body of pharmacists, the feature of the meeting was the admirable address of the president, Mr. John C. Unmey.

Revision and publication of the British Pharmacopœia, he stated, was a subject of great importance to pharmacy at the present time, and the principal part of his address was devoted to a detailed and comprehensive résumé of pharmacopœial revision for the past century. While the pharmacists of the United States have, for many revisions of their Pharmacopœia, practically played a predominant part in this sort of work with physicians taking but a slight interest, conditions in Great Britain have always been the opposite. There, the pharmacists have practically no official standing and receive no recognition for any work done in connection with pharmacopœial revision. That this state of affairs is inconsistent and should no longer continue is the plea made by the president of the Conference and he argues that as the pharmacists now receive State recognition as dispensers of medicine the time is ripe for the British pharmacists to strive for a readjustment of functions, both from a medical and pharmaceutical standpoint, and he urges "that this should be done with amity on both sides."

He then goes on to show by way of contrast how pharmacopœial revision is accomplished in the other principal countries of the earth, stating that the only country besides his own that has a Revision Commission from which practising pharmacists are excluded is Italy.

He states that the right of the General Medical Council to publish the British Pharmacopœia can only be abrogated by act of Parliament and that now is the opportune time for the promotion of a bill to that effect.

The President presents for the consideration of the Conference the text of a bill which covers the important problems of revision of the pharmacopœia, along the lines of an Imperial Pharmacopœia, in which there is representation of medicine and pharmacy in the mother country, India, and the colonies.

The following papers were communicated to the meeting:

The Standardization of Opium for Pharmaceutical Purposes.

By P. Van Der Wielen.

The writer of this paper states that it is certain that the action of opium is not caused by morphine alone, and as the quantity of the other alkaloids vary and probably in the same proportion as morphine, it follows that standardization of morphine alone does

not make certain an invariable preparation, though as a matter of fact it is better than no standardization at all. He urges the making of an opium by mixing four opiums of different origin without the addition of inert material. This he would term a "normal opium"—in other words standardized for total alkaloids and meconic acid.

The Myrrh of Commerce, Ancient and Modern.

By E. M. Holmes.

The author gives a very detailed description of this drug, one of the earliest spoken of in history. He states that it is generally understood that the myrrh mentioned in the Bible is the medicinal myrrh, but such is not the case. In Somaliland where both the medicinal and perfumed myrrh are produced they are known as Mal-mal and Habbak Hadi, *i.e.*, the gum of the Hadi tree; the latter, the perfumed myrrh, is the produce of *Commiphora erythroea* var. *glabrescens*. The medicinal of course, is *Commiphora Myrrh;* and, as is well known, is frequently mixed with other resins. He gives a brief but interesting description of the trees yielding myrrh.

Chemical Examination of Wheat Germ.

By F. B. Power and A. H. Salway.

The material known as wheat germ was formerly a waste product of the flour mills, sometimes used as a fodder. Recently it has come into use as an ingredient of certain kinds of bread because of its dietetic value. It contains considerable fat and a high nitrogen content. It is also the best known source of phytosterol. It has been shown by other workers that wheat germ contains: choline, betaine, allantoin, cane sugar, dextrose, and raffinose, and in their examination this was confirmed by the authors of this paper, although no evidence was obtained showing the presence of asparagine, which has been recorded as present by Frankfurt. They also discovered the presence of sinapic acid, thought to be only present in mustard seed or at least in the family of *Cruciferæ*.

The Structure of the Soya Bean.

By T. E. Wallis.

The author gives a complete macroscopical and microscopical description of the characters of the soya bean. The illustrations

that accompany this paper were drawn by the author and will be of great value to those whose work is analytical in character, particularly in food stuffs. The increasing use of the soya bean will undoubtedly lead to its adulteration with ground meal.

Some Factors in Thyroid Pharmacy.

By R. Glode Guyer.

Observations on the thyroid glands obtained from Scotland were made by the author. He found that the weight varied considerably. The influence of the age of the sheep and class of breed was also taken into account, and the author states that the ratio of dried to moist substance is 1 to 3.6. He also thinks too much stress is laid on the iodine content and that on this point much more work is necessary.

Further Report on Iodine Content of Thyroid Gland.

By N. H. Martin.

The author submits a tabulation of a series of determinations of the iodine content of thyroid glands obtained from a certain district as compared to some from same district last year. He maintains that a strength of 0.25 per cent. would not be too high for supplies of the gland from this district.

Extract of Male Fern.—Analytical Notes.

By C. A. Hill.

The best safeguard against the adulteration of extract of male fern, the author states, is an assay process for filicic acid, with chemical and physical constants of the genuine product. A content of 22 per cent. of the filicic acid, or filicin, he would regard as not too high for a genuine extract.

An Examination of the Essential Oil of Witch Hazel.

By H. A. D. Jowett and F. L. Pyman.

The writers give considerable data of an experimental nature of work done in connection with the oil from *Hamamelis virginiana*. Their results agree pretty closely with those of Scoville, whose conclusion was that the oil consists chiefly of a terpene.

A trace of a phenolic substance, a mixture of fatty acids in the free and combined state, and a mixture of solid saturated hydrocarbons were also separated, while indications of the presence of other compounds, including oxygenated substances, were also obtained.

Ergot and Its Preparations: A Critical Review of the Requirements of the British Pharmacopœia.

By F. N. Carr and H. H. Hale.

In the light of present-day knowledge of ergot pharmacopœial revision of the preparations of this interesting drug is very necessary. Among the many interesting suggestions offered by the authors of this paper is one relating to ergots other than that growing on rye, which they think should receive official recognition, provided that an acceptable method of standardization for active alkaloid could be worked out. The authors examined some ergot from the tall fescue grass (*Festuca arundinacea*), which grows wild in vast swampy areas in New Zealand, and is said to be constantly and heavily infected with ergot. They estimate this ergot to be three times as active as an average specimen of good rye-ergot which usually contains about 0.1 per cent. of ergotoxine.

They also advise that Extractum Ergotæ (Ergotin) of the British Pharmacopœia should be dropped. "If a soft extract is needed, as in the preparation of pills, the extraction should be carried out with 60 per cent. alcohol, and to this citric acid should be added instead of HCl. The acid might with advantage be added to the alcohol before the extraction is performed. Such a product could be evaporated to a soft extract without filtration, and would contain practically the whole of the active constituents of the ergot."

They also regard the fluidextract of the U. S. P. as superior to the Extractum Ergotæ Liquidum of their pharmacopœia and advise its adoption. Its adoption would also have the further advantage of tending to international uniformity.

The Determination of Hypophosphites, With Notes on Commercial Samples.

By J. T. Cocking and J. D. Kettle.

For the determination of hypophosphites the authors found that potassium dichromate is of decided advantage compared to other oxidizing agents, particularly as the pure salt is easily obtained,

solutions made from it are very stable, and an exact volumetric solution can be prepared from the pure dry salt without further standardizing. Considerable data are given whereby this method was used for the determination of the various hypophosphites.

A Note on the Alleged Poisonous Properties of Honey from Datura Stramonium.

By B. H. Deane.

The author shows in an interesting manner how the statement that honey from Datura Stramonium is poisonous became embodied in the literature relating to honey. It appears that a Consul at Trebizonde in a report to his government makes the statement that honey from that section of the world is unfit for food—in fact, poisonous and that the poisonous principle contained therein is from the flowers of *Datura Stramonium.* Mr. Deane shows that this is impossible because the structure of the flower of this plant makes it impossible for bees to visit it. He also makes the observation that it does not necessarily follow that because other parts of the plant are poisonous the nectar secreted by the flowers is likewise. It is known that honey bees visit the flowers of *Atropa Belladonna,* yet no bad effects have ever been attributed to such honey.

The Composition of Certain Formates.

By C. H. Hampshire and W. R. Pratt.

The writers give the result of a very careful and comprehensive investigation of commercial specimens of the principal formates. They give in detail the analytical methods used to determine the exact composition of sodium, ferric, magnesium, calcium, quinine, and strychnine formate.

Note on Sodium Thiosulphate Solutions.

By C. H. Hampshire and W. R. Pratt.

Having need in the course of some chemical examinations to make titrations with sodium thiosulphate solutions the authors restandardized them each time before use. They noticed, however, that standard solutions of decinormal strength remained un-

changed for many weeks even when exposed to daylight in bottles of white glass. No less than a dozen authoritative works on chemistry contain statements to the effect that solutions of this salt are unstable and require standardization.

The authors give the result of a series of examinations under varied conditions and prove that while there may be some decomposition on keeping it is so slight as to render unnecessary the elaborate precautions advised in literature. After eight months they found solutions reliable without restandardization.

The Proportion and Composition of the Alcohols in Geranium Oils.

By W. H. Simons.

The principal constituents of the geranium oils are geraniol and citronellol, both free and combined, but few attempts are made to differentiate between them. The total alcohols are usually determined and calculated as geraniol. The author, using the formylation process as recommended by Jeancard and Satie confirms the findings of these workers that the Bourbon oil contains more citronellol than the African oil.

Mercuric Oxide as a Standard for Volumetric Analysis.

By L. Rosenthaler and A. Abelmann.

The authors found that we have in mercuric oxide a substance at our disposal that is useful for the four chief volumetric operations—acidi- and alkali-metry, iodimetry, oxidimetry, and argentometry. They give in detail their method of use and results obtained and seem to prove their case.

Notes on the Polenske and Reichert Values of Some Oils.

By G. D. Elsdon and H. Hawley.

With the exception of one or two edible oils there are practically no Polenske figures available in literature; for this reason the authors thought it might be of interest to determine this figure on various oils. They found that the Polenske values for different samples of the same oil are much more constant than are the Reichert values.

Powdered Rhubarb.

By E. T. Brewis and H. Deane.

The authors endeavored to discover what would be a fair standard of extractive for rhubarb if such a requirement were demanded in the forthcoming British Pharmacopœia. They seem to think that the minimum of 35 per cent. required by the German Pharmacopœia is reasonable. The quality of powdered rhubarb at present on the market was carefully examined. The limit of ash of 12 per cent. suggested by the Committee of Reference in Pharmacy would include most of the powdered rhubarb found in commerce.

ESSENTIAL OIL INDUSTRY: 1909.

Statistics of the essential oil industry in the United States for 1909 are presented in detail in a bulletin soon to be issued by Director Harris of the Bureau of the Census, Department of Commerce. It was prepared under the direction of W. M. Steuart, chief statistician for Manufactures.

Summary of Statistics.—The number of establishments reporting in 1909 was 68, with 408 persons engaged in the industry, capital of $1,365,438, and expenses of $1,522,171, of which $184,495 was paid for salaries and wages and $1,255,478 for materials. The value of the products reported was $1,737,234.

The average number of persons engaged in the industry during 1909 was 408, of whom 290 were wage earners, 91 proprietors and officials, and 27 clerks, etc.; 390 were males and 18 females. No wage earners under 16 years of age were reported.

Leading Producing States.—The five leading states in the manufacture of essential oils in 1909 were Michigan, New Jersey, Connecticut, New York, and Pennsylvania, in the order named; in 1904, the five leading states were New York, Connecticut, New Jersey, Michigan, and Indiana. Michigan ranked first in 1909, with products valued at $486,159, or 28 per cent. of the total, and fourth in 1904, with products valued at $240,215, an increase for the 5-year period of 102.4 per cent., while New York ranked fourth in 1909, with products valued at $195,363, and first in 1904, with products valued at $502,014, a decrease of 61.1 per cent. For the industry as a whole the increase in value of products from 1904 to 1909 was 18.6 per cent.

Character and Output of Establishments.—Of the total establishments in the industry, 16.2 per cent. were under corporate ownership in 1909, as compared with 13.5 per cent. in 1904; these establishments reported 68 per cent. of the total value of products in 1909 and 45.1 per cent. in 1904. Establishments under firm ownership decreased considerably in relative importance during the 5-year period, reporting only 3.8 per cent. of the total value of products in 1909, as compared with 34 per cent. in 1904.

Of the 68 establishments in 1909 and 52 in 1904 there were 5 at each census whose products were valued at more than $100,000, with 74.6 per cent. of the total value of products in 1909, as compared with 77.8 per cent. in 1904. The average value of products per establishment decreased from $28,167 in 1904 to $25,548 in 1909. The average number of wage earners per establishment increased from 2.5 in 1904 to 4.3 in 1909.

Value of Products.—The production of essential oils increased in value during the decade 1899–1909 from $700,709 to $1,108,603, or 58.2 per cent., while the value of the witch-hazel extract produced in 1909 was $412,322, over seven times that in 1899, which was $54,649. The production of each kind of essential oil was considerably greater in 1909 than in either 1904 or 1899. The production of witch-hazel in 1909, however, represented a decrease of 14.9 per cent. as compared with 1904, when the value was reported as $367,873, although it was more than six times as great as in 1899.

Materials and Products.—The principal materials used in the industry are grain alcohol, crude essential oils for refining, and the herbs, leaves, bark, roots, etc., from which the crude oil is extracted. The consumption of grain alcohol in the industry amounted to 75,274 gallons, costing $188,618, in 1909, as compared with 84,602 gallons, costing $206,255, in 1904, and 13,258 gallons, costing $44,888, in 1899.

Connecticut is the chief producer of oil of black birch and witch-hazel extract; Michigan, of oil of peppermint, spearmint, tansy, and wormwood; New Jersey, of oil of wintergreen; and Virginia, of oil of sassafras.